BULLETIN OF MARINE SCIENCE, 64(3): 509–512, 1999

ALCYONIDIUM ALBESCENS (ECTOPROCTA: CTENOSTOMATA) A NEW SPECIES FROM THE MID-ATLANTIC COAST OF THE UNITED STATES

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ABSTRACT

Alcyonidium albescens, new species, is described from colonies encrusting blue crabs from the Beaufort, North Carolina area. The species is characterized by its whitish to gray coloration, flat colony surface, low orificial papillae, sparse kenozooids, distinct zooid boundaries, and preference for motile substrata, particularly living blue crabs and horseshoe crabs.

Species of the ctenostome bryozoan genus *Alcyonidium* Lamouroux occur in marine fouling and benthic communities around the world. Colony morphology within the genus ranges from transparent, gelatinous crusts to firm, rubbery bunches of "deadman's fingers" (e.g., those of the colonies of *Alcyonidium verrilli* Osburn, tons of which may be cast upon the beaches of lower Chesapeake Bay after storms). Because *Alcyonidium* species are commonly encountered in benthic surveys and fouling studies, their correct identification is important to biologists. However, species identification in this group is notoriously difficult (Hayward, 1985). Species level identification in bryozoans depends on taxonomic characters of individual zooids. Compared to the intricately calcified zooid skeletons of cheilostomes, the non-calcified zooids of *Alcyonidium* have few available characters and can show a large amount of variability in those characters which can be used. Molecular genetic studies of British *Alcyonidium* have also shown considerable cryptic speciation. At least ten genetically distinct species were identified from material that would previously have been considered to represent two or three named species (Thorpe and Ryland, 1979). The authors were then able to find ecological and morphological characters distinguishing some of them, although they did not coincide with the morphological parameters given for previously named species (Hayward, 1985).

A study of epizoic bryozoans on blue crabs, *Callinectes sapidus* Rathbun, from Beaufort, North Carolina (Key et al., this issue) showed that the most common bryozoan encrusting crab carapaces was an undescribed species of *Alcyonidium.* Its morphological and morphometric characteristics do not fit those of any known European or previously described eastern U.S. species and, in combination, can distinguish it from all other described species in the genus. As this species was also collected at a number of mid-Atlantic locations during a 6-yr survey of the bryozoan fauna of the east coast of the United States (Winston and Hayward, in prep.) and can be expected to be commonly encountered in intertidal and subtidal work in that area, we are describing it here as a new species: *Alcyonidium albescens.*

MATERIALS AND METHODS

Specimens of the new species were obtained from carapaces of blue crabs collected from a depth of 1–5 m in the Newport River estuary, Carteret County, just north of Beaufort, North Carolina. Crabs were preserved in 70% ethanol for study and analysis of encrusting epizoans (Key et al., 1997). The specimens illustrated were dehydrated from 70–100% ethanol and processed by critical point drying before being coated with gold and palladium for examination in a Zeiss Scanning Electron Microscope.

SYSTEMATICS

Order Ctenostomata Busk, 1852
Suborder Carnosa Gray, 1841
Superfamily Alcyonidioidea Johnston, 1838
Family Alcyonidiidae Johnston, 1838
Genus *Alcyonidium* Lamouroux, 1813

Alcyonidium albescens new species
(Figure 1A–C)

Alcyonidium polyoum Osburn 1932: 443; 1944: 15, fig. 7.
Alcyonidium polyoum Maturo 1957: 18, fig. 3.
not *Alcyonidium polyoum* Hassall 1841 = *Alcyonidium gelatinosum* (Linnaeus) 1761.

Holotype.—VMNH no. 327, colony encrusting lateral carapace spine of crab S-52. *Paratype.*—VMNH no. 328, colony encrusting lateral spine of crab S-11. Both collected from the Newport River estuary, 1–2 m deep channel in between two small islands in the Newport Marshes (34°44′30″N, 76°41′00″W) 7 km upstream from the mouth of the river at Beaufort Inlet, Beaufort, North Carolina, 22 August 1980.

Etymology.—Albescens (L.), becoming white, from *albus,* white. Named for its white coloration when preserved.

Diagnosis.—Encrusting *Alcyonidium* with firm, flat colony surface, low orificial papillae, sparsely distributed kenozooids, and distinctly delimited zooid margins; tentacle number 14–17; embryos brooded.

Description.—Colony encrusting, a translucent dingy white to gray in color (turning white in alcohol), with a smooth, firmly gelatinous texture. Zooids oval (at growing edge) to rounded hexagonal, 0.40–0.78 mm in length (mean = 0.54 mm, n = 18), by 0.24–0.40 mm in width (mean = 0.29, n = 17). Frontal zooid surface fairly flat. Zooid boundaries apparent even in young zooids, and marked by a broad indentation in older zooids (Fig. 1A,B). Small kenozooids (0.10–0.20 mm in length and width) sparsely interspersed with autozooids. Orifice round, and marked by a low papilla, about 0.15 mm in diameter, that is apparent even when lophophores are completely retracted (Fig. 1C). Orifice becoming quadrate when setigerous collar and tentacles are slightly protruded, then circular as lophophore expands. Polypides white, tentacle number 14–17 (mean = 15, n = 18). Tentacles straight except for those of largest lophophores, which may bell out slightly at the tips.

Ecology.—Commonly found encrusting shells of blue crabs (especially lateral spines) and horseshoe crabs, occasionally on skate egg cases, algae, shells, and other substrata. Young Chesapeake Bay colonies observed in November were feeding actively with much tentacle flicking and attempted cage capture of particles. One zooid in a blue crab-encrusting colony from the Beaufort study (collected in August) was brooding a whitish embryo. Salinity range from full salinity (≥32‰) down to 20‰ (according to Osburn, 1944). Depth range from low intertidal to subtidal.

Taxonomic Discussion.—Several encrusting *Alcyonidium* species occur along the Northeast coast of North America. They have usually been identified as either *Alcyonidium mytili* Dalyell or *Alcyonidium polyoum* Hassall, a junior synonym of *A. gelatinosum* (Linnaeus), but a survey of this stretch of coastline has shown that none are conspecific with any British or European species (J. E. Winston and

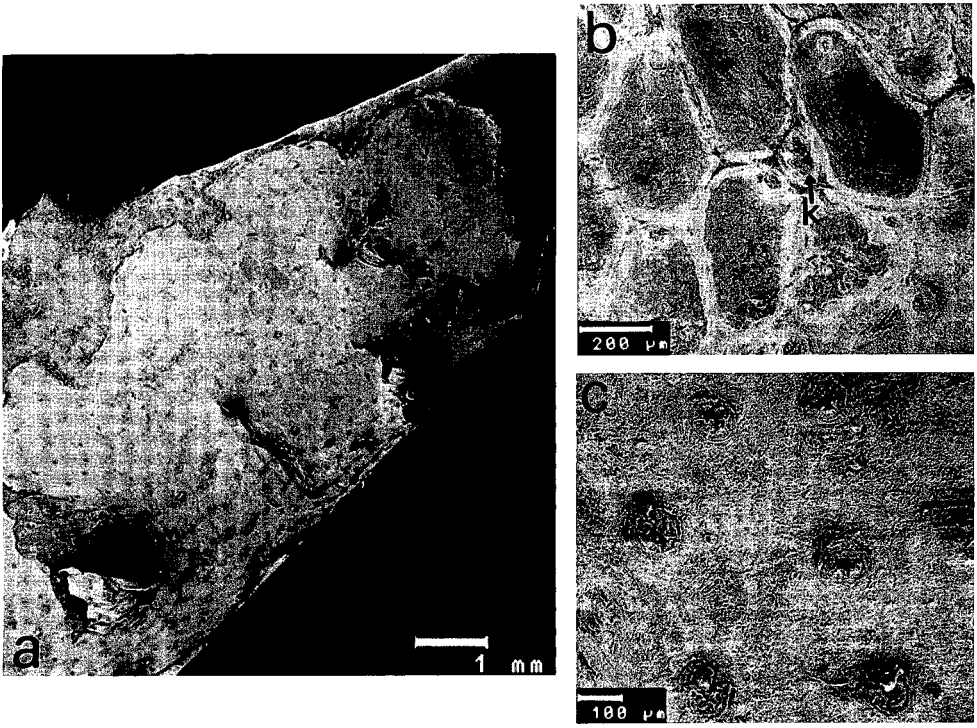

Figure 1. a) *Alcyonidium albescens* n. sp. (holotype). General view of colony encrusting lateral spine of blue crab carapace. b) Surface of colony, showing autozooids and one kenozooid [k]. Note distinct zooid boundaries. c) Group of zooids, showing concentrically wrinkled orificial papillae.

P. H. Hayward, unpubl. data). Specimens collected between southern New Jersey (Stone Harbor) and Beaufort, North Carolina all appear to belong to a single undescribed species, called *A. polyoum* by Osburn (1932, 1944) and Maturo (1957) in previous studies of bryozoans of the region.

Alcyonidium albescens most closely resembles the eastern Atlantic and North Sea species *A. albidum* Alder (Hayward, 1985: 48) in zooid shape, kenozooid presence, low papillate orifice and distinct zooidal boundaries. It differs from *A. albidum* in smaller zooid size, lower tentacle number, and presence of a smooth sheet-like growing edge (versus the loosely anastomosing zooids of the colony margin of *A. albidum*). The fully contracted orifice of *A. albescens* also lacks the horseshoe-shaped fold characteristic of *albidum*. *A. albescens* differs from *A. gelatinosum*, the species with which (under the name *of A. polyoum*) southeastern U.S. specimens have been confused, by its coloration, lack of complete transparency, kenozooid presence, smaller zooid size, and lower tentacle number range, and its ecological preference for motile substrata.

Distribution.—Southern New Jersey to North Carolina. Further investigations may show its range to extend southward to Florida.

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DATE SUBMITTED: September 9, 1997. DATE ACCEPTED: December 8, 1997.

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